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ABSTRACT

Evaluated was a project designed to provide a supplementary individualized reading remediation program for 1,221 educable mentally retarded students (12-16 years old) from 41 intermediate or junior high schools in New York City. The project goal was to diagnose the reading disabilities of the students, raise their level of reading proficiency, and ameliorate their reading disabilities. Teaching methods included one-to-one and small group instruction, and the use of multisensory instructional materials and equipment. Using pre- and post-test evaluation, it was determined that student participants in the program succeeded in raising their levels significantly beyond the level anticipated had they not participated. It was also found that diagnostic procedures were universally applied and utilized. And fianlly, it was found that delays in funding shortened the treatment period, and that difficulties in hiring prevented much contribution by psychological support personnel to the success of the program. The aspects of the program which were observed to account for the highly positive results were the individually tailored remediative efforts made possible by small group and one-to-one instruction, and the skill with which teachers executed both diagnostic and remediative tasks. (Author/SBH)

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DIAGNOSTIC AND REMEDIATION PROGRAM TO AMELIORATE THE READING DISABILITIES OF THE CRMD PUPILS

February - June 1975

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SANFORD WEINSTEIN, ED.D.

An evaluation of a New York City School district educational project funded under Title I of the Elementary and Secondary Education Act of 1965 (PI89-10) performed for the Board of Education of the City of New York for the period encompassing February through June 1975.

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DIAGNOSTIC AND REMEDIATION PROGRAM TO AMELIORATE

THE READING DISABILITIES OF JHS--CRMD PUPILS

ABSTRACT OF PROGRAM

This project was designed to provide a supplementary individualized reading remediation program for 1,221 Title I eligible educable mentally retarded pupils, ages 12-16. The project goal was to diagnose the reading disabilities of these students, raise their level of reading proficiency, and to ameliorate their reading disabilities. Teaching methods included one to one and small group instruction, and the use of multisensory instructional materials and equipment.

By means of a pre and post-test evaluation design and estimates of anticipated growth, it was determined that student participants in the program succeeded in raising their reading levels significantly beyond the level anticipated had they not participated. While the average gain, though significant, was small, many students reported substantial gains. It was also found that diagnostic procedures were universally applied and utilized. And finally, it was found that delays in funding shortened the treatment period, and that difficulties in hiring prevented much contribution by psychological support personnel to the success of the program.

The aspects of the program which were observed to account for the highly positive results were the individually tailored remediative efforts made possible by small group and one to one instruction, and the skill with which teachers executed both diagnostic and remediative tasks.

CHAPTER I: THE PROGRAM

This project was designed to provide a supplementary individualized reading remediation program for 1,221 Title I eligible educable mentally retarded pupils, ages 12-16. The project goal was to diagnose the reading disabilities of previously identified pupils, raise their level of reading proficiency and to ameliorate their reading disabilities.

Students were referred, screened and evaluated on the basis of BCRMD supervisor and teacher recommendations, data from pupil records and Metropolitan Reading Achievement Test scores indicating a reading grade two years or more below the value predicted by the student's mental age. These students were selected from forty-one (41) intermediate or Junior High Schools servicing Title I children in the five boroughs of New York City. The participating schools were the following:

54 M	60 M	49 K	320 K	162 X
118 M	70 M	126 K	252 K	131 X
13 M	167 M	64 K	232 K	52 X
117 M	180 Q	218 K	263 K	120 X
45 M	157 Q	292 K	296 K	148 X
120 M	72 Q	142 K	162 K	166 X
143 M	27 R	293 K	111 K	167 X
56 M	7 R	35 K	155 X	98 X
				133 X

Project personnel were to include the following:

a) 1 coordinator
b) 1 assistant coordinator
c) 3 teacher trainers
d) 5 psychologists
e) 5 teacher-diagnosticians
f) 5 guidance counselors
g) 34 reading teachers
h) 34 para-professionals
i) 2 senior stenographers

The personnel were to be organized into five teams, each including a reading diagnostician and a psychologist to give the students an academic and psychological evaluation, a learning prescription and appropriate assistance to remediate learning problems related to reading. Educational, psychological and family counseling were to be provided by the project staff. Individual, and small group instruction emphasizing sensory and kinesthetic approaches, were to be offered to the students by a reading specialist. Teaching techniques were to include the use of multi-media instructional materials and equipment.

CHAPTER II: EVALUATION PROCEDURES

The objectives of this evaluation were as follows:

1. To assess the extent to which the participants demonstrated statistically significant differences between their real post/test scores and their anticipated post/test scores.

   1.1. Subjects: All participants

   1.2. Procedures: Depending on the nature of the diagnosis, the Wide Range Achievement Test, the Gates MacGinitie Readiness Skills Test and/or the Gray Oral Reading Test, whichever was indicated, was to be administered on a pre/post/test basis.

   1.3. Data Analysis: Where grade level equivalents were yielded, data was to be analyzed by the real (treatment) post/test vs. anticipated (without treatment) post/test design, using correlated "t" tests between the anticipated post/test scores and the actual post/test scores. On tests which did not yield grade level equivalents, correlated "t" tests were to be run between pre and post/test raw scores.

   1.4. Time Schedule: Pre/test was to be administered shortly after the beginning of the program (January 1, 1975) and post/tests were to be administered shortly before the termination of the program (May 30, 1975).

2. To determine the extent to which the program, as actually carried out, coincided with the program as described in the Project Proposal. This determination was to be made through fifty-six (56) half day, and 10

full day field visits at participating schools and other relevant facilities. The visits were to begin early in January and continue through the completion of gathering post/test data.

Certain limitations were imposed on the evaluation procedures described above due to delayed funding. Funded at mid-point in the 74-75 school year, the program become operative in February when personnel with administrative responsibilities were hired. The majority of teachers were placed by the first week of March. Preparation for pre/testing was not completed until the end of March with pre/testing commencing April 1, 1975. Since post/testing was scheduled for the end of May, the treatment period was shortened by half; from four months to two months. Also, the opportunity for field visits was reduced correspondingly. While a number of achievement tests had been proposed for use in pre and post/testing, the Wide Range Achievement Test (WRAT) was used for all participants regardless of diagnosis.

A further limitation on the evaluation procedures was imposed by discrepancies between the total N and the number tested. Data was received indicating a total participant population of 1009 rather than the 1221 indicated in the proposal. Of this total, data was incomplete for 92 due to absence from post/testing, having moved, transferred, or dropped from the program. Another 122 were lost because of recent immigration from non-English speaking areas outside of the continental United States (Haiti and Puerto Rico) with no records of starting dates of schooling. Since length of prior schooling is necessary for calculating anticipated post/test scores, 795 (78.8%) of the participants were included in the comparison of anticipated post/test scores with actual post/test results. Data for the 122 for whom records of prior schooling were incomplete was analyzed separately using a correlated "t" test for the significance of the difference between pre/test raw score and post/test raw score.

CHAPTER III: FINDINGS

Data Findings

The population of the study was composed of 1009 Children with Retarded Mental Development. This population ranged in age from a low of 11.67 years to a high of 18.58 years. The mean age was reported as 15.11 years with a standard deviation of 1.03 years; 9.7% (97) of the population was unreported in terms of age. Males constituted 58.7% (592) of the population and females constituted 41.0% (415), with .2% unreported as to sex classification.

The major hypothesis predicted statistically significant difference between the final testing on WRAT as against an estimated post/test measure derived from an historical regression procedure. As Table 1 demonstrates, a significant difference between testings was found.

TABLE 1

Means, Standard Deviations and T Values of Final and Estimated Testing

Variable	n	Mean	Sd.	Mean Diff.	Sd. Diff.	t
post/test		2.56	1.24			
	795			-.282	.470	-16.92*
predicted post/test		2.28	1.14			

*significant <.001

However, the statistical difference between testings is not surprising in view of the medical history of the population, in which small differences can

seem magnified. The median increase over the two month period was .255 grade equivalent with a range of difference in scores between -1.70 to a high of 5.30 years. Only 5.7% of the sample recorded a gain of above 1.0 years. In view of the age of the subjects and their initial low scores at the pre/test phase, some of the gain must be attributed to an effect of regression toward the mean on the basis of their age.

It must also be noted that the predicted post/test scores (Table 1 above) do not produce differences that are significantly less than use of the uncorrected raw score, as Table 2 below shows.

TABLE 2

Means, Standard Deviations and T Values of Final and Uncorrected Testing

Variable	n	Mean	Sd.	Mean Diff.	Sd. Diff.	t
post/test		2.58	1.24			
	917			-.334	.459	-22.01*
Uncorrected pre/test		2.24	1.13			

*significant <.001

This is due to the average adjusted learning rate being .058 years (standard deviation .074) for the two-month period. This correction factor is below the minimum interval of measurement of the test--one month.

In Table 2, an n of 917 is reported. This includes the 122 students not used in the historical regression (correction factor) computations of Table 1. Table 3 immediately following presents a pre and post testing comparison of this group of 122 students from outside the continental U.S. with incomplete records.

TABLE 3

Means, Standard Deviations, and T Values of Pre and Post Test Raw Scores for Students with Incomplete Records of Previous Schooling

Variable	n	Mean	Sd.	Diff.	t
Post/test	122	2.67	1.31	31	-6.98*
Pre/test		2.36	1.25		

*significant $<.001$

The differences in Table 3 were found to be highly significant also at the .001 level.

The bulk of the sample (78.6%) reported starting school between January, 1964 and December, 1967. However, 6.4% (82) of the sample reported starting school in 1970 or thereafter; 15.1% (152) lacked necessary school start information.

Table 4 illustrates a frequency distribution of changes between post and uncorrected pre/test scores.

TABLE 4

Categorized Distribution of Post Test and Raw Score Differences, Percents Adjusted for Unreported Cases

G.E.(shift as part of one year)	n	Adjusted Percent
-.4 decrease and below	15	1.6
-.1 to -.3	54	5.9
no change	122	13.3
+.1 to +.3	392	42.8
+.4 and above	334	36.4
unavailable	92	
	1009	

Narrative Findings

Thirty (30) field visits were made in order to determine the extent to which the program, as actually carried out, coincided with the program as described in the Project Proposal. Through methods of direct observation, formal and informal interview, and inspection of facilities, materials and equipment, inferences were drawn based on the following:

1. The degree to which diagnostic procedures produced usable information for treatment prescriptions.
2. The degree to which diagnostic findings were utilized in remediative prescriptions.
3. The degree to which teacher training activities might influence the statistical outcomes of the program.
4. The extent to which psychological support services could contribute to the statistical outcomes of the program.
5. The extent to which the program was integrated into the on going activities of the school.

Reading diagnoses were made for all students through clinical observations by teachers and teacher trainers, and through administration of the Durell Analysis of Reading Difficulty test. Participants in the program were diagnosed across the full range of reading problems. Some were found to be at pre-primer levels in such areas as oral and silent reading, word analysis skill, comprehension, and phonic abilities. Others were found to possess strengths equivalent to as high as fifth grade in these same diagnostic areas.

It was observed without exception, that treatment approaches were aimed at goals determined by the diagnostic procedures. Teaching strategies developed around diagnostic findings were noted to include multi-sensory methods, high motivation reinforcement activities, and anxiety reducing devices in a manner

consistent with the findings. The individualized and small group instruction techniques were observed to be particularly well suited to the diagnostic process.

Teacher training workshops were held prior to implementation of the program and on a bi-weekly basis throughout the remainder of the treatment period. The intent of the workshops, as they were carried out by the five (5) teacher trainers hired for the purpose, was to provide the teachers with the necessary skills to execute the diagnostic and remediative process. Interviews with the teachers indicated that many of the skills necessary to the tasks of the program were completely new to them, and would not have been possible to carry out had there been no training. Some examples of these tasks are: administration and interpretation of the Durrell Inventory, execution of student centered methodologies, and the establishment of rapport necessary to individualized instruction. Since it was observed that these skills were being well executed, it was concluded that the teacher training effort did contribute significantly to the statistical outcomes of the program.

The area most difficult to evaluate was that of supportive psychological services. The greatest discrepancies from the proposal occurred here due to difficulty in finding personnel. Although all positions were advertised, no psychologists were hired, nor were any teacher diagnosticians. There was also considerable delay and difficulty in filling the guidance positions. As a result the entire supportive services aspect of the program became the burden of the five (5) guidance counselors. While they did perform such tasks as individual and group counseling, referrals, parent conferences, home visits, and medical crisis interventions, their resources appeared to be spread so thin over such large numbers of schools and students that their contribution to the statistical outcome of the program is questionable. Earlier funding would allow for sufficient lead time to hire necessary personnel prior to the implementation of the program.

In most cases the program appeared to be reasonably well integrated into the ongoing activities of the schools. Support from administrators ranged from high levels (if passive) of interest to very active efforts such as the provision of special supplies, materials, and assistance. The report of these administrators was that they considered the quality of teaching in the program to be at least as good if not better than the performance of their permanent faculty. Relations between program staff and regular faculty personnel seemed equally facilitative of program goals, and there seemed to be a generalized acceptance of the program's potential to meet real pupil needs, and to provide services beyond regular school capabilities.

Despite the acceptance and support received, two problems did appear which had the potential to interfere with the outcomes of the program. First, in some schools no independent space was provided and program teachers were forced to carry out their tasks in the midst of and simultaneous to regular class activities. In these cases the potential for confusion and distraction appeared to be quite high. The second problem was the result of conflict in scheduling between program participation and participation in city wide, district wide, or school wide activities. This problem had considerable potential to reduce frequency of exposure to the program treatment.

CHAPTER IV: SUMMARY OF MAJOR FINDINGS, CONCLUSION AND RECOMMENDATIONS

Summary of Findings

The major hypothesis of this study sought to assess the significant differences between the post/test and the predicted post/test scores. On the basis of the statistical tests described earlier and shown in Tables 1, 2, and 3, a statistically significant increase was found. Moreover, while the magnitude of the average gain was small, an examination of Table 4 reveals that many students reported substantial gains in the program.

On the basis of the observations made during field visits, it was found that diagnostic procedures were universally applied and utilized in the remediative treatment, and that teacher training efforts contributed significantly to the execution of the diagnostic and remediative tasks. It was further found that difficulty in hiring personnel for psychological support services prevented much contribution to the success of the program from that segment of the proposed effort. And finally, it was found that with the exception of some cases of scheduling conflict and problems with space, the program was well integrated into the overall activities of the schools.

The only areas of discrepancy between the program as proposed and as executed appeared in the reduced number of participants from the project proposal, the shortened treatment period, the absence of psychologists and teacher diagnosticians from the personnel roster, and the presence of two more teacher trainers than was proposed. Most of these discrepancies appear to be directly attributable to insufficient lead time to properly structure the program due to delays in funding.

Conclusion and Recommendations

Based on the findings of this study, it must be concluded that the efforts

of this program were successful in raising reading levels of participants to a point significantly beyond that which might have been expected had they not participated.

In view of this conclusion and based on the observations cited earlier, the following recommendations are proposed:

1. It is recommended that, for any future recycling, funding and personnel assignments be completed prior to initiation of the program and the school year.
2. It is recommended that pupils be exposed to a full year of remediation input, consisting of two complete semesters.
3. It is recommended that, in implementing the program in the future, care be exercised to coordinate the activities of remedial instruction with the total school program.
4. It is recommended that each remediation group be provided with instruction in a space separate from simultaneous other school activity.
5. It is recommended in the light of the overall observation that the achievement gains of the study population were derived almost exclusively from the activities of this program, that the funds be recycled for so valuable a project for the entire school year 1975-76.

Use Table 26, for Historical Regression Design (6-step Formula) for Reading and Mathematics.

26. Standardized Test Results

In the Table below, enter the requested assessment information about the tests used to evaluate the effectiveness of major project component/activities in achieving desired objectives. This form requires means obtained from scores in the form of grade equivalent units as processed by the 6-step formula.(see District Evaluator's Handbook of Selected Evaluation Procedures, 1974, p. 29-31) Before completing this table, read all footnotes. Attach additional sheets if necessary.

25

Component Code	Activity Code	Test Used 1/	Form		Level		Total N 2/	Group ID 3/	Number Tested 4/	Pretest		Predicted Posttest Mean	Actual Posttest		Obtained Value of t	Sub-Group 5/
			Pre	Post	Pre	Post				Date	Mean		Date	Mean		
6 0 8 6 1	7 2 0	WRAT 65	one form		1	1	1009	61	795	4/1/75	2.23	2.28	5/30	2.56	16.92	>.001

1/ Identify the test used and year of publication (MAT-58, CAT-70, etc.).
2/ Total number of participants in the activity.
3/ Identify the participants by specific grade level (e.g., grade 3, grade 5). Where several grades are combined, enter the last two digits of the component code.
4/ Total number of participants included in the pre and posttest calculations.
5/ Provide data for the following groups separately: Neglected (code as N), Delinquent (code as D), and Handicapped (code as H). Place the indicated code letter in the last column to signify the subgroup evaluated.

Use Table 28 for norm referenced achievement data not applicable to Table 26. (See "Instructions" Item 5 before completing this table.)

28. Standardized Test Results

In the table below, enter the requested assessment information about the tests used to evaluate the effectiveness of major project components/activities in achieving desired objectives. Before completing this form, read all footnotes. Attach additional sheets if necessary. [27]

Component Code	Activity Code	Test Used 1/	Form		Level		Total N 2/	Group ID 3/	Number Tested		Pretest				Posttest				Statistical Data		Subgroup 9/
			Pre	Post	Pre	Post			4/ N	5/	Date	Mean	6/ SD		Date	Mean	6/ SD		7/ Test	8/ Value	
6 0 8 6 1	7 2 0	WRAT-65	one form		1	1	1009	61	917*	1	4/75	2.24	1.13		5/30/75	2.58	1.24		t	22.01	>.001

1/ Identify test used and year of publication (MAT-58; CAT-70, etc.)
2/ Total number of participants in the activity.
3/ Identify the participants by specific grade level (e.g., grade 3, grade 5). Where several grades are combined, enter the last two digits of the component code.
4/ Total number of participants included in the pre and posttest calculations.
5/ 1 = grade equivalent; 2 = percentile rank; 3 = z score; 4 = Standard score (publisher's); 5 = stanine; 6 = raw score; 7 = other.
6/ SD = Standard Deviation
7/ Test statistics (e.g., t; F; X^2).
8/ Obtained value
9/ Provide data for the following groups separately: Neglected (code as N), Delinquent (code as D), and Handicapped (code as H). Place the indicated code letter in the last column to signify the subgroup evaluated.

*122 (no starting date given)

Appendix A page 2

No. 09-58617

Use Table 28 for norm referenced achievement data not applicable to Table 26. (See "Instructions" Item 5 before completing this table.)

28. Standardized Test Results

In the table below, enter the requested assessment information about the tests used to evaluate the effectiveness of major project components/activities in achieving desired objectives. Before completing this form, read all footnotes. Attach additional sheets if necessary. [27]

Component Code	Activity Code	Test Used 1/	Form		Level		Total N 2/	Group ID 3/	Number Tested		Pretest			Posttest			Statistical Data		Subgroup 9/
			Pre	Post	Pre	Post			4/ N	5/	Date	Mean	6/ SD	Date	Mean	6/ SD	7/ Test	8/ Value	
608610	720	WRAT-65	one form		1	1	1009	61	122	1	4/1/75	2.36	1.25	5/30/75	2.67	1.31	t	6.98	>.001
x																			

1/ Identify test used and year of publication (MAT-58; CAT-70, etc.)
2/ Total number of participants in the activity.
3/ Identify the participants by specific grade level (e.g., grade 3, grade 5). Where several grades are combined, enter the last two digits of the component code.
4/ Total number of participants included in the pre and posttest calculations.
5/ 1 = grade equivalent; 2 = percentile rank; 3 = z score; 4 = Standard score (publisher's); 5 = stanine; 6 = raw score; 7 = other.
6/ SD = Standard Deviation
7/ Test statistics (e.g., t; F; X^2).
8/ Obtained value
9/ Provide data for the following groups separately: Neglected (code as N), Delinquent (code as D), and Handicapped (code as H). Place the indicated code letter in the last column to signify the subgroup evaluated.

OFFICE OF EDUCATIONAL EVALUATION - DATA LOSS FORM

(attach to MIR, item #30) Function #09-58617 School Year 1974-75

In this table enter all Data Loss information. Between MIR, item #30 and this form, all participants in each activity must be accounted for. The component and activity codes used in completion of item #30 should be used here so that the two tables match. See definitions below table for further instructions.

Component Code					Activity Code			(1) Group I.D.	(2) Test Used	(3) Total N	(4) Number Tested/ Analyzed	(5) Participants Not Tested/ Analyzed		(6) Reasons why students were not tested, or if tested, were not analyzed	
												N	%		Number/ Reason
6	0	8	6	1	7	2	0	61	WRAT	1009	795	214	21.2%	No starting date for schooling given	122
														Absence from post-testing (moved, transferred, or dropped from program)	92

(1) Identify the participants by specific grade level (e.g., grade 3, grade 9). Where several grades are combined, enter the last two digits of the component code.
(2) Identify the test used and year of publication (MAT-70, SDAT-74, etc.).
(3) Number of participants in the activity.
(4) Number of participants included in the pre and posttest calculations found on item #30.
(5) Number and percent of participants not tested and/or not analyzed on item #30.
(6) Specify all reasons why students were not tested and/or analyzed. For each reason specified, provide a separate number count. If any further documentation is available, please attach to this form. If further space is needed to specify and explain data loss, attach additional pages to this form.